Protection of Plant Species of Economic Value

Introduction

The increasing popularity of herbal remedies in the United States and abroad has increased demand for wild- grown plant material. High prices associated with the strong market have resulted in greater harvest pressure including greater poaching pressure on desirable plant species found in the Park. American ginseng (Panax quinquefolius) is the most well known of these species, but Black Cohosh (Cimicifuga racemosa), and Bloodroot (Sanguinaria canadensis) also have the potential to become threatened.

Fruiting American ginseng (Panax quinquefolius) plant.

Management Needs

The protection of medicinal plant species desired by poachers presents enforcement problems for park personnel. Rangers have limited time for patrols and must spend it in areas that are most likely to contain large populations of the target species. Even with abundant field patrols, the species of concern grow within such large and remote areas that it is impossible to adequately patrol all populations. Adequate protection can only be achieved by gaining a better understanding of where the species are most likely to be found, and by finding a way to deter poaching by making the Park plant populations undesirable.

Current Procedures

In 2002 and 2003 scientists from the U.S. Geological Survey –Biological Resources Divivion, Leetown Science Center used park data detailing the location and habitat preferences of Ginseng, Bloodroot, and Cohosh to create a model that predicted the areas most likely to contain the target species. Park personnel then completed field sampling to validate the model and further refine its ability to predict suitable locations for Ginseng, Bloodroot, and Cohosh. This map allows law enforcement staff to visualize areas most vulnerable to poaching and provides assistance in planning field patrols.

The challenge of deterring ginseng poaching over the Park's large and spread- out area has been addressed by using a non- toxic dye to mark ginseng roots throughout the Park. Marking is done by first gently removing the soil from the upper surface of roots, the non- toxic dye is then applied, and the roots re- covered with soil. The dye is gradually absorbed into the root and can not be washed off. The presence of dye on the roots makes them unsuitable for sale to reputable dealers. However, if the roots are sold and intercepted by law enforcement personnel, the dye contains characteristics that allow the roots to be definitively identified as originating in Shenandoah National Park. In this way the dye serves as a deterrent to poachers, and also aids Park law enforcement personnel in making successful prosecutions when roots are recovered.

What We Have Learned

- Park ginseng populations have an average of two- thirds of their plants in the one or two leaf (prong) classes. This high proportion of small plants is one indicator of poaching pressure.

- Cohosh and bloodroot populations appear to be widespread and secure in the park at this time.

- Only about 4500 acres of the park (2.3%) is considered the most suitable habitat for ginseng, bloodroot, and cohosh.

- The predictive model for ginseng, blootroot, and cohosh was able to predict the presence of at least one of the target species 89% of the time. The most difficult plant to target was Ginseng. It was found where predicted 50% of the time.

- When using the plant distribution model in the field, ginseng is 11.2 times more likely to be found, black cohosh 6.8 times more likely to be found, and bloodroot 3.3 times more likely to be found (Young et al. 2003) when compared to random searching.

References

Young, J.A., F.T. van Manen, and C.A. Thatcher. 2003. Habitat modeling for protection of illegally harvested plants in National Parks of the Blue Ridge Mountains. National Park Service Report. U.S. Geological Survey.